# EME at the Deep Space Exploration Society (DSES)

Roger Oakey W3MIX

Alex Nersesian K6VHF

Paul Sobon NOØT

https://dses.science

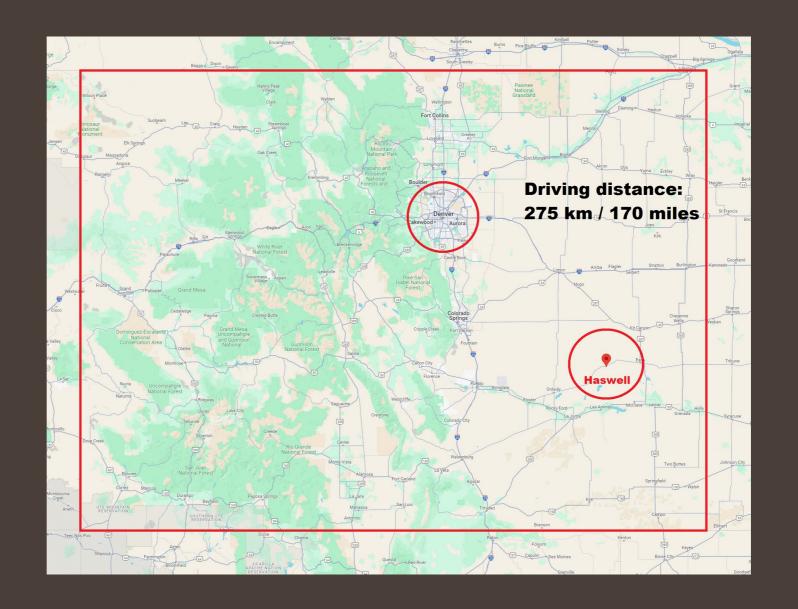


# Topics

- Roger Oakey: Site location, history, and EME infrastructure
- Alex Nersesian: 23cm hardware at feed point ("DIANNE")
- Paul Sobon: Station layout and operation

# DSES site

# Haswell Colorado, USA



# Entrance

Kiowa County road 20



# History

- Built in 1958 to research communication to the Distant Early Warning system (DEW line).
- Through government auction, Paul Plishner purchased the site in 1984 and donated it to the Deep Space Exploration Society in 2009.
- Since 2009, the DSES has been reconditioning and maintaining the radio telescope. Its primary use is for studying pulsars, magnetars and interstellar hydrogen distribution - we hams hijack it from time to time for EME use!
- Our callsign, KØPRT, recognizes and memorializes Paul Plishner "Plishner Radio Telescope"

# Plishner Radio Telescope

18 meters 60 feet





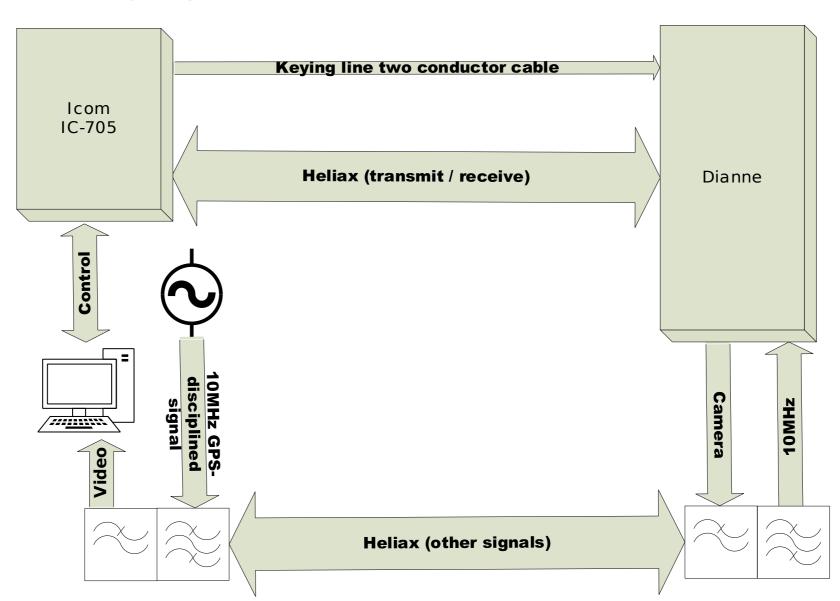
# Control





#### Trailer

#### Dish



Alex Nersesian

K6VHF

"DIANNE" package



#### About me

#### Alex K6VHF (ex 4L1FP):

- Has been licensed since 1999.
- Holds a Master Degree in Electrical Engineering.
- Has more than 25 years experience in Aerospace/Space/Defense industries as electromagnetic physics engineer/consultant.
- Has passion in RF design, Microwave (1G-134GHz), DX expeditions, EME, MS, Tropo, Satellites & Radio Astronomy.
- Holds multiple records on VHF/UHF and published over 10 technical articles.
- Member of DSES, ARRL(life), QRZ(life), IDEXA, CERT, etc.

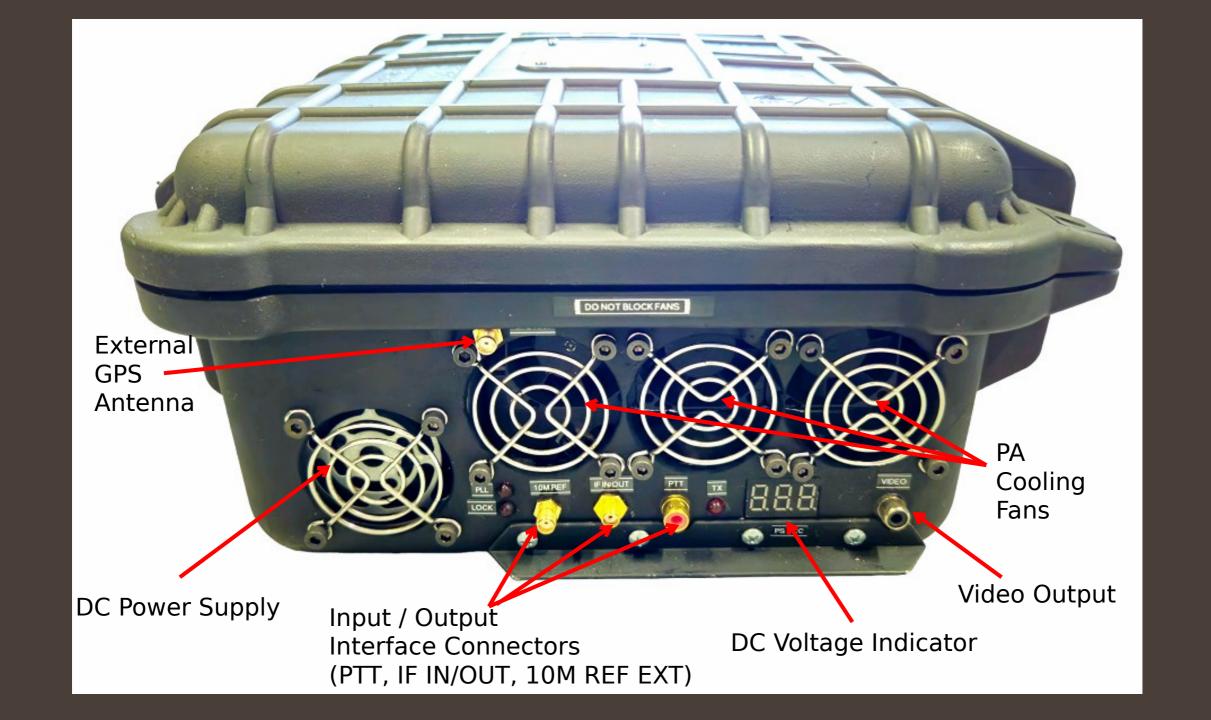
#### "DIANNE"

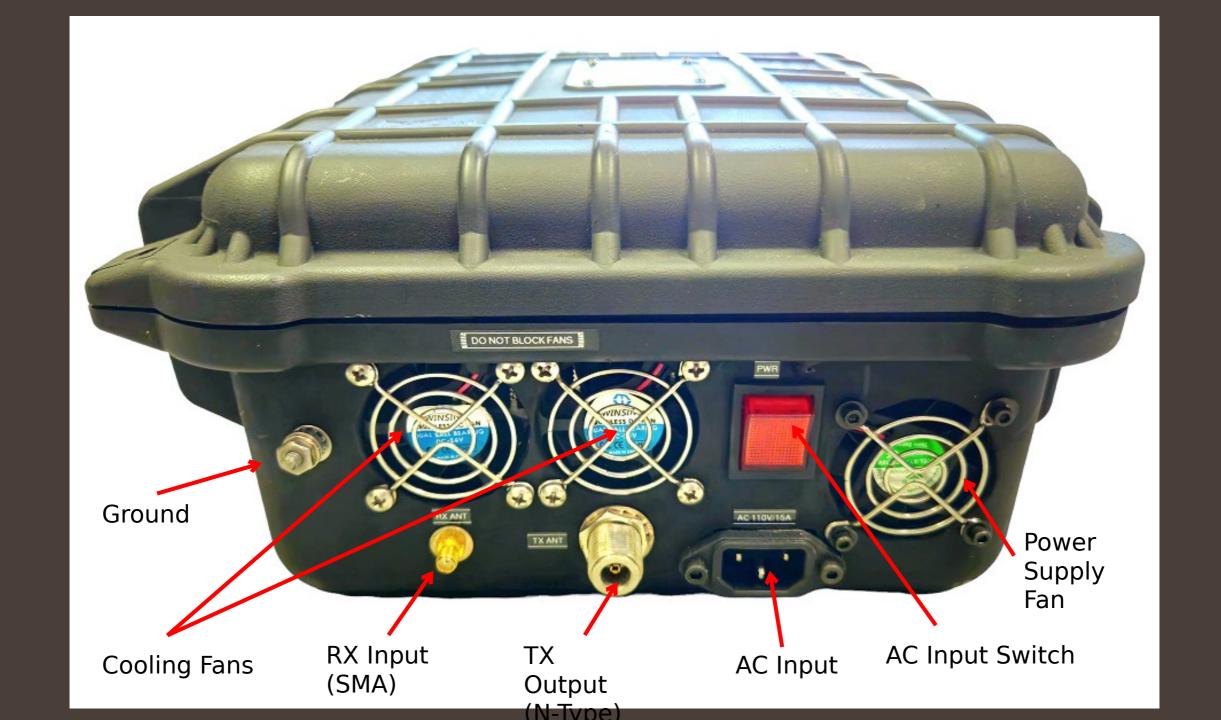
#### What is it?

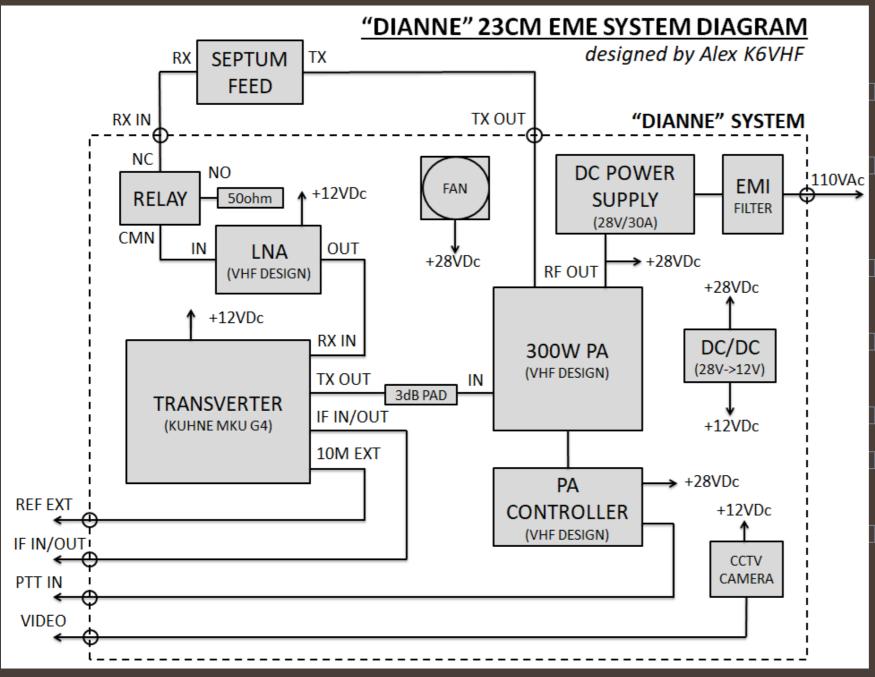
- DIANNE is of Latin origin that means "divine", "bright", and "shining one".
- DIANNE is also the Goddess of the Moon.
- An Advanced Portable 23cm EME System.
- All-In-One solution (To-Go Box).
- Fully remote. Easy to deploy and operate.
- Ideal for DX expeditions, temporary and stationary use.
- Programmable (any IF frequencies) and upgradable.

- Operational RF Range: 1296MHz-1298MHz
- IF Range: 28MHz (can be used 50MHz, 144MH
- IF Input Power: 1W
- ☐ Total RX Gain: >50dB
- ☐ Total RX NF: <0.8dB
- Frequency Stability: GPSDO
- RF Output Power: 300W
- Total DC current:
  - RX (0.8A)
- TX (26A)
- AC Input: 110V-220V (50/60Hz)
- Total Weight: 17.5lbs(8kg)
- Size: 13.75"(350mm) x 11.5"(292mm) x
  6"(152mm)

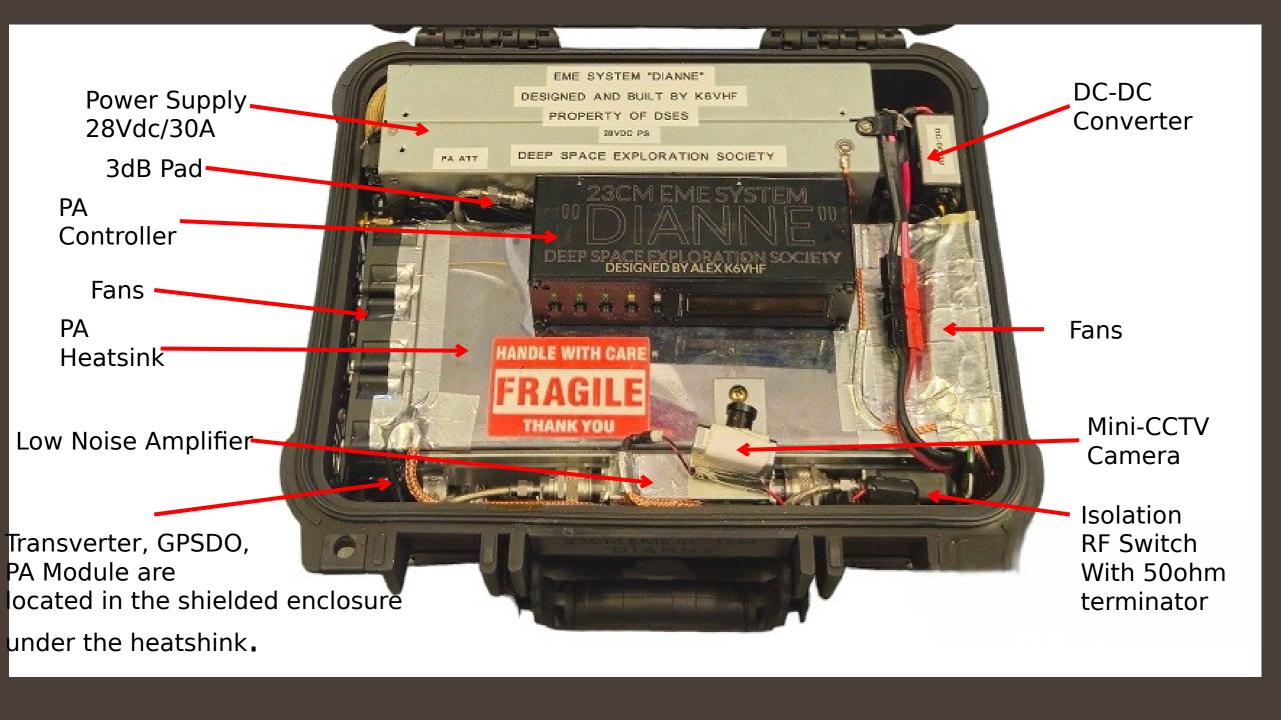


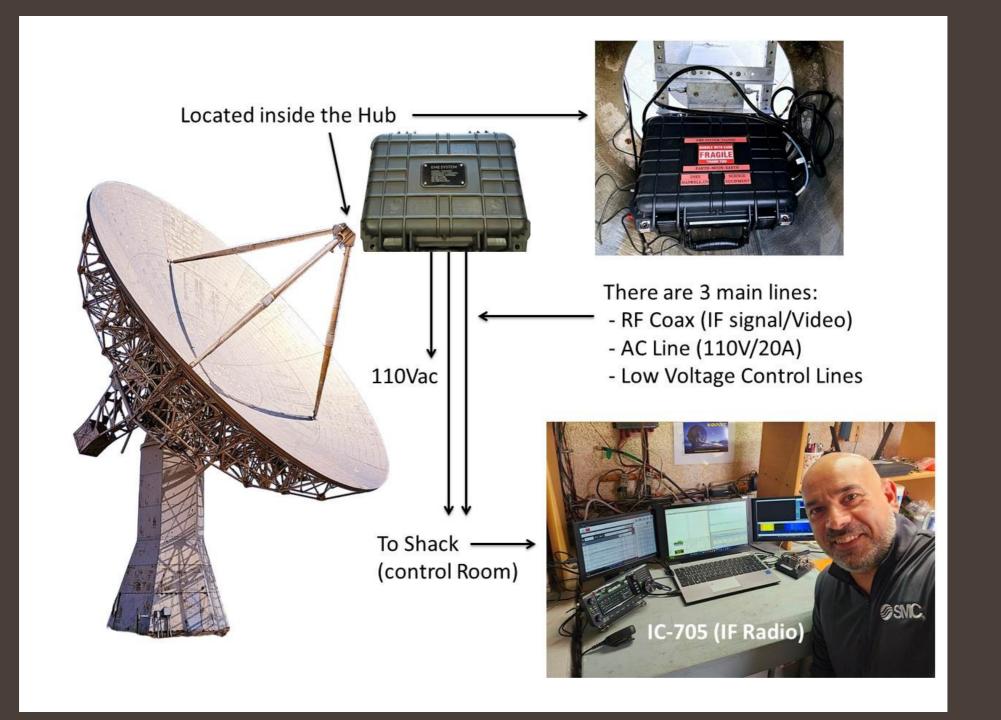






- Kuhne Transverter MKU G4
- VHF Design Low Noise Amplifier 36dB Gain/0.3dB
- VHF Design 350W Power Amplifier
- Honeywell Power Supply 28VDC/30A
- RADIALL RF Switch
- DC-DC Converter (28V-12V)
- Mini CCTV Camera





#### Links to essential "DIANNE" components:

- Transverter:
  <a href="https://shop.kuhne-electronic.com/kuhne/en/shop/converter-transverte/transverter-er/MKU+13+G4++23+cm+Transverter/?card=1912">https://shop.kuhne-electronic.com/kuhne/en/shop/converter-transverte/transverter/er/MKU+13+G4++23+cm+Transverter/?card=1912</a>
- 300W Power Amplifier: <a href="https://vhfdesign.com/pas/ldmos-rf-power-amplifier-23cm-300-watt.html">https://vhfdesign.com/pas/ldmos-rf-power-amplifier-23cm-300-watt.html</a>
- Low Noise Amplifier: <a href="https://vhfdesign.com/lnas/lna-eme-sky67151-for-23cm-and-21cm-bands.html">https://vhfdesign.com/lnas/lna-eme-sky67151-for-23cm-and-21cm-bands.html</a>
- Hard Plastic Case:
  <a href="https://www.amazon.com/gp/product/B07SPSVX7Q/ref=ppx\_yo\_dt\_b\_search\_asin\_title?ie=UTF8&psc=1">https://www.amazon.com/gp/product/B07SPSVX7Q/ref=ppx\_yo\_dt\_b\_search\_asin\_title?ie=UTF8&psc=1</a>

Paul Sobon

NOØT

EME station layout and operation



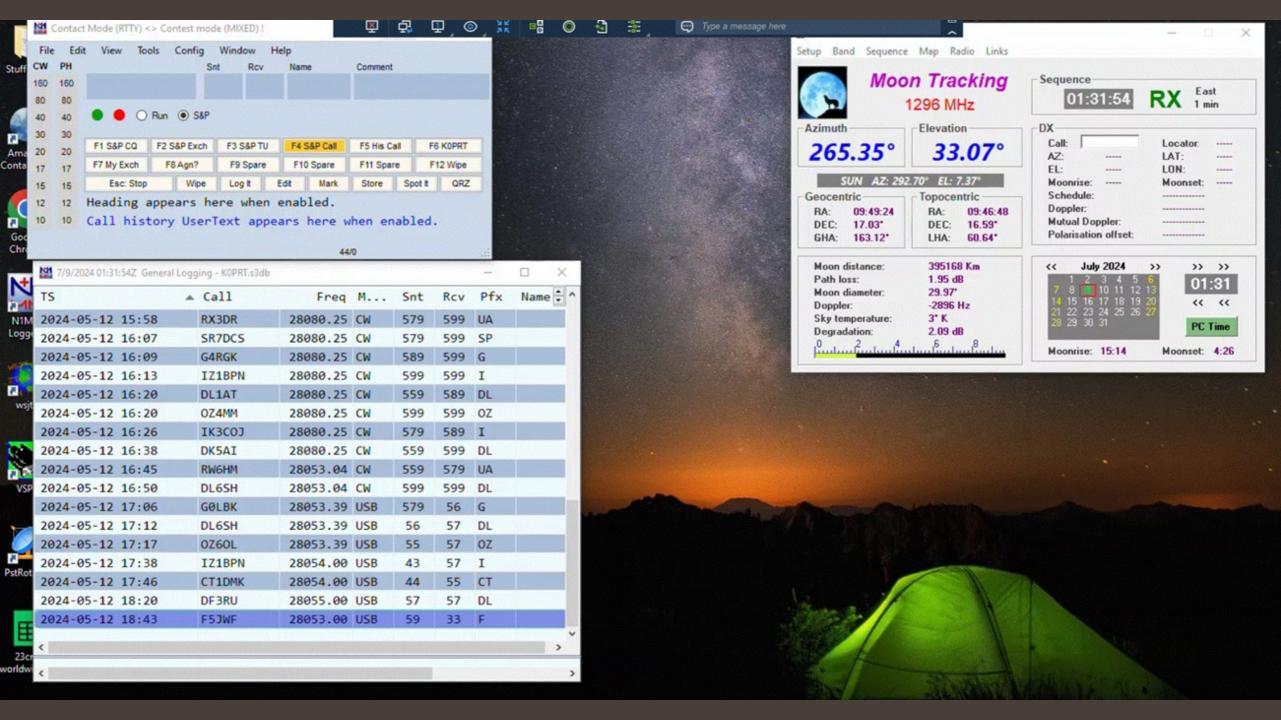


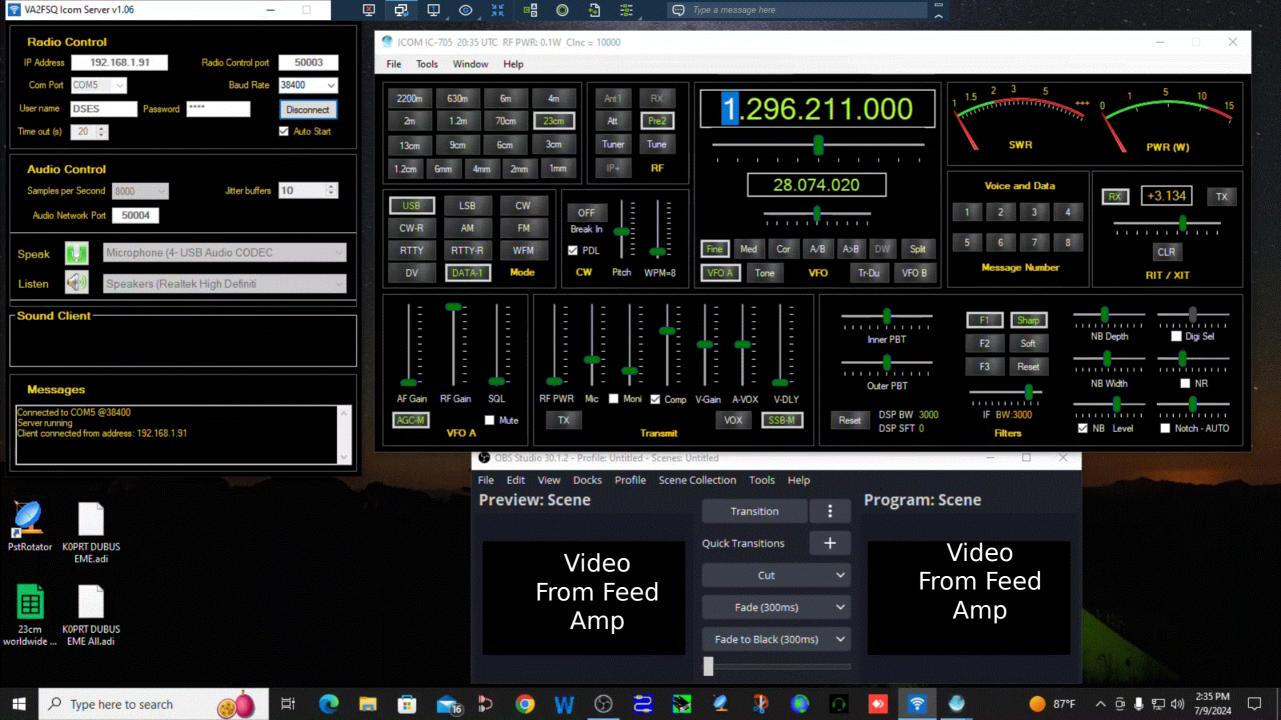
#### Hardware

- Windows 64bit Computer with Windows 10
- ICOM IC-705 <a href="https://www.icomamerica.com/lineup/products/IC-705/">https://www.icomamerica.com/lineup/products/IC-705/</a>
- IC-705 daughter board upgrade <a href="https://shop.ihelpu.tech/products/icom-ic-705-usb-c-control-board-upgrade">https://shop.ihelpu.tech/products/icom-ic-705-usb-c-control-board-upgrade</a>
  - Videos about it: protects the IC-705 better from the amplifier, faster USB-C charging
  - •
  - •

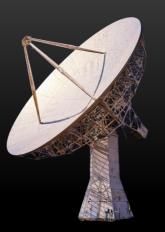
#### Software

- Win4lCOM <a href="https://icom.va2fsq.com/">https://icom.va2fsq.com/</a>
- PSTRotator <a href="http://www.pstrotator.com/">http://www.pstrotator.com/</a>
- N1MM+ <a href="https://n1mmwp.hamdocs.com/downloads/n1mm-full-install/">https://n1mmwp.hamdocs.com/downloads/n1mm-full-install/</a>
- OBS Studio <a href="https://obsproject.com/">https://obsproject.com/</a>
- VSPE <a href="https://eterlogic.com/Products.VSPE.html">https://eterlogic.com/Products.VSPE.html</a>
- WSJT-X <a href="https://wsjt.sourceforge.io/wsjtx.html">https://wsjt.sourceforge.io/wsjtx.html</a>





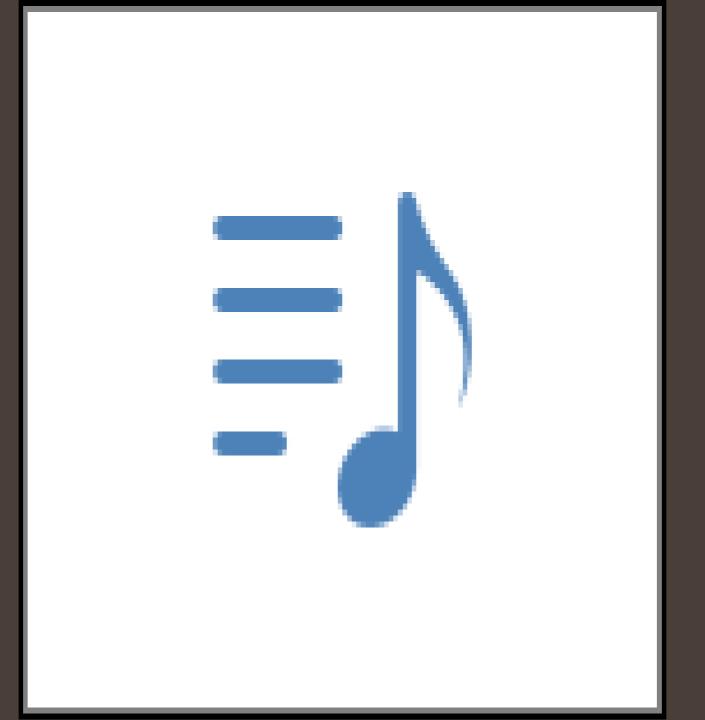
Next New Project?





# PROJECT "EVE 25"

Deep Space Exploration Society https://dses.science



## Questions?

## Thank You!

Alex K6VHF
Paul NO0T
Roger W3MIX

https://dses.science